Updates on FE Deformation Studies

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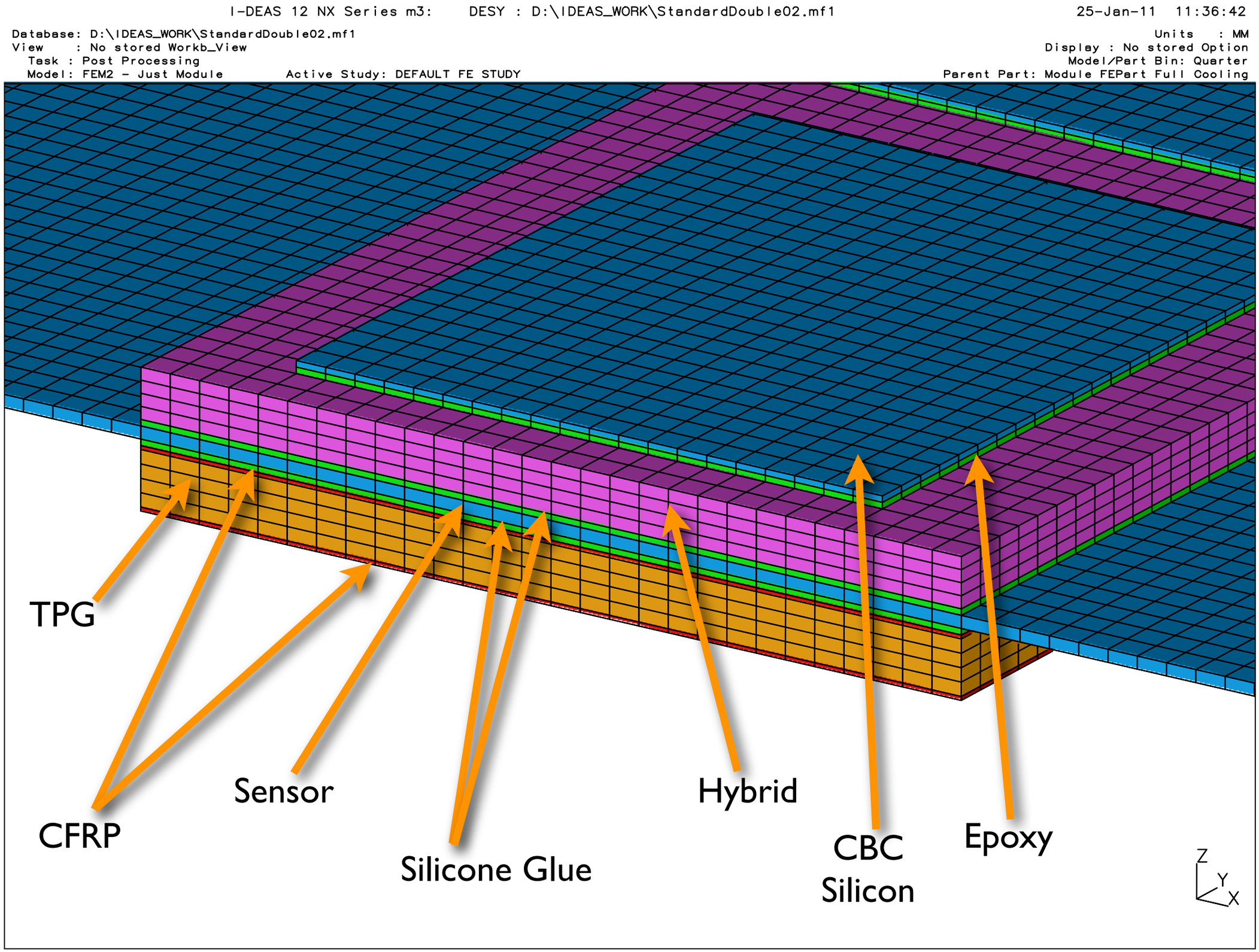
New Standard Design with Short Strips

- TPG strip located under sensor
  - used to be between sensor and hybrid
  - heat from chips has to go through sensor
    - same principle as in Long Contact Design
  - Better symmetry wrt. to deformation

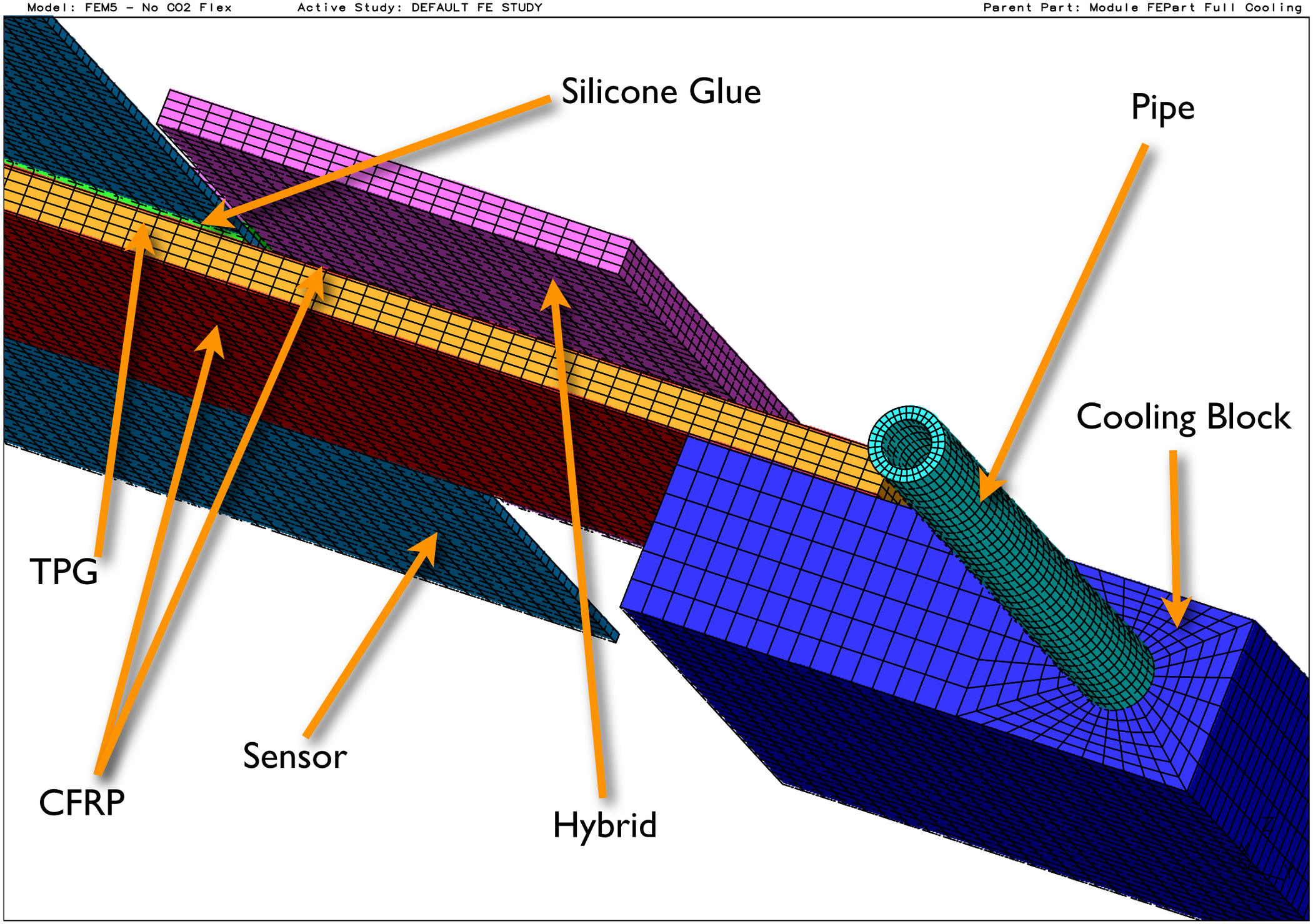
- Hybrid made of ‚top-secret' material
  - Endicott Corel-Z
    - Google search yields exactly zero results
  - CTE is tuneable
    - 3e-6/°C measured by CERN
  - Assume similar mechanical properties as for G10

- TPG strip still not modelled correctly
  - Material properties of TPG not really well known
  - Increased stability due to epoxy pillars is still neglected
    - working on a detailed FE calculation of the TPG strip
    - Influence of epoxy pillars probably negligible

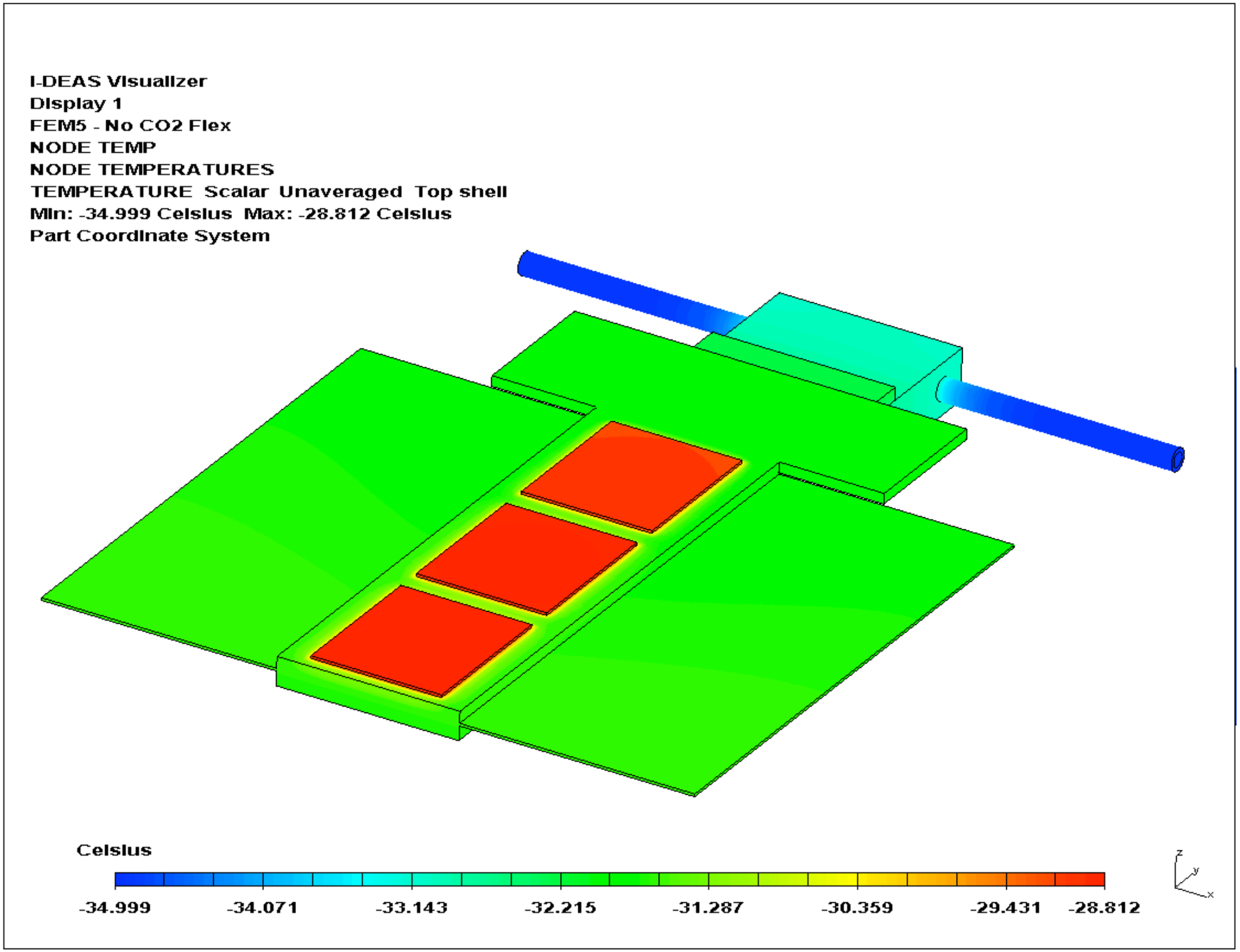
New Standard Design with Short Strips cont.



New Standard Design with Short Strips cont.

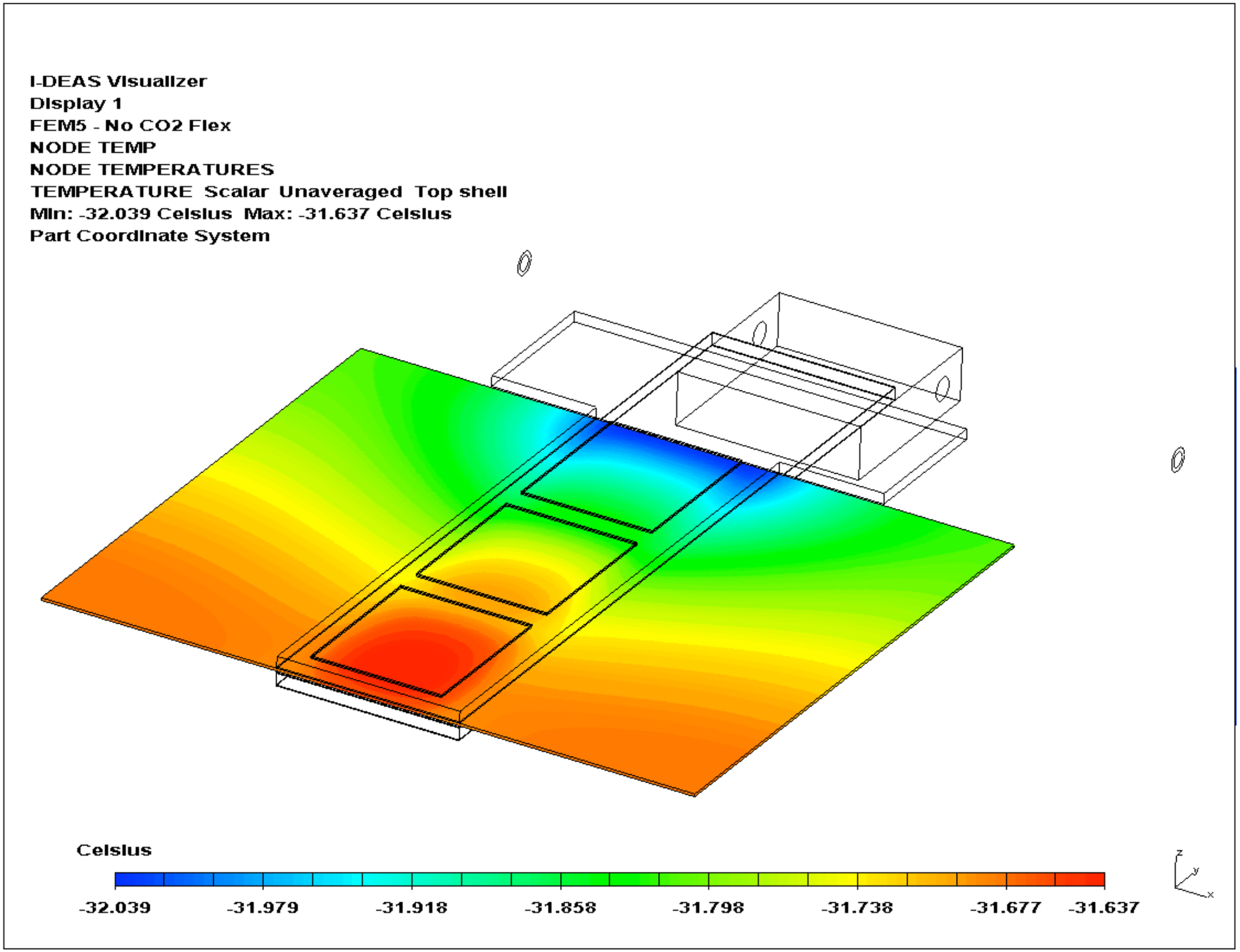


Thermal Results - Full Module



- Results from thermal calculation is used in deformation analysis
  - Temperatures on nodes mapped to nodes as thermal constraint

Thermal Results - Sensor



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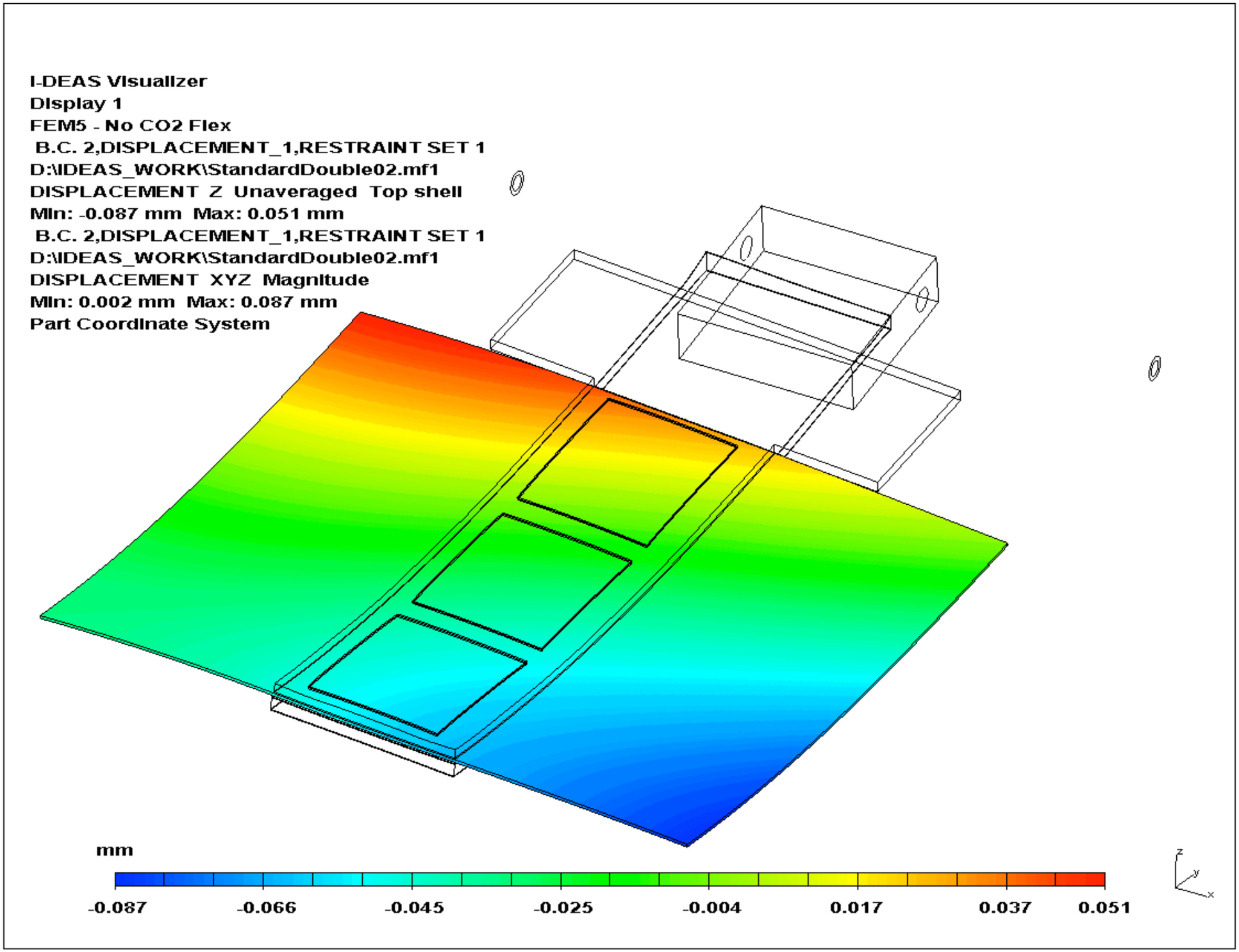

- Cooling block movable wrt. module along Y axis (long hole)

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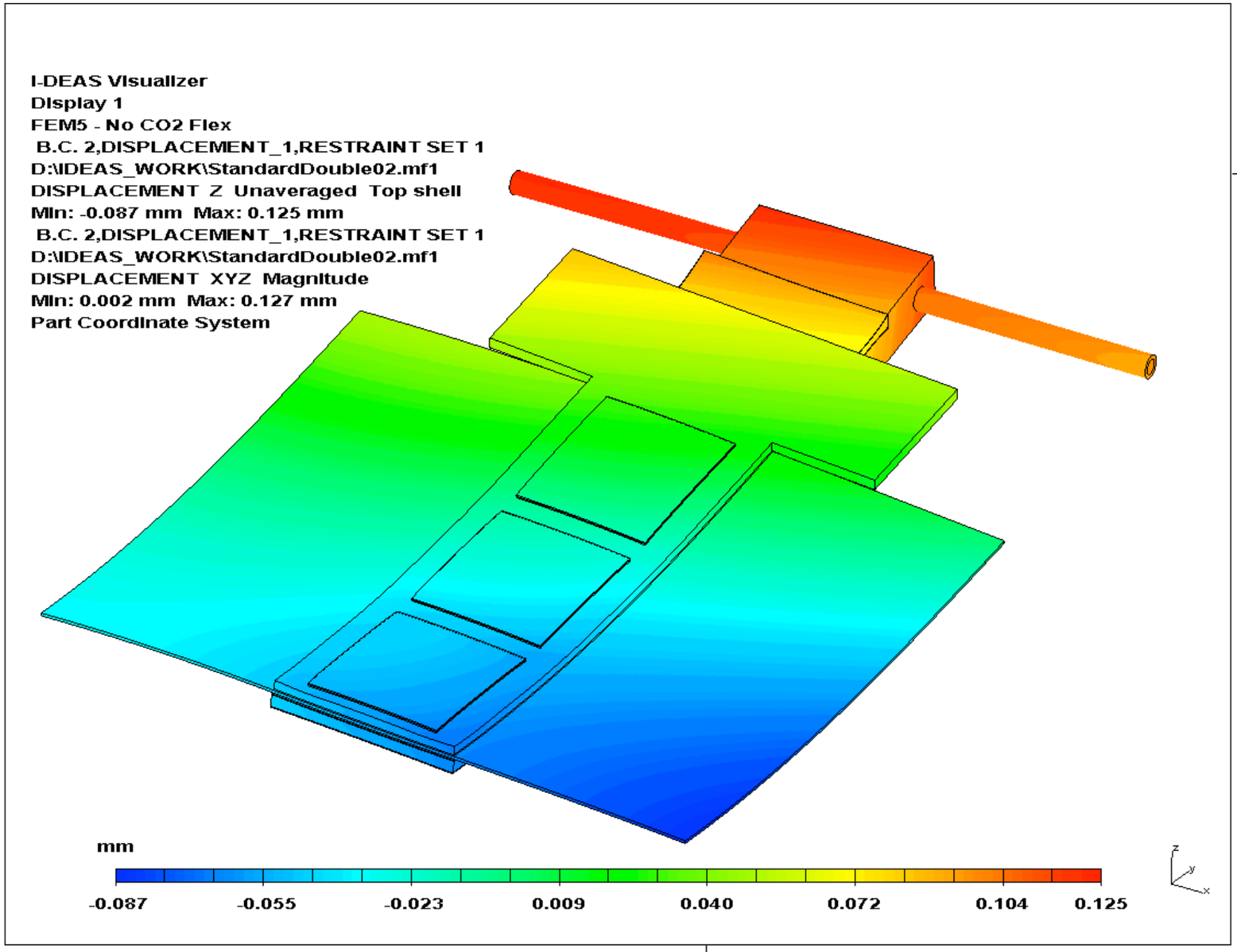

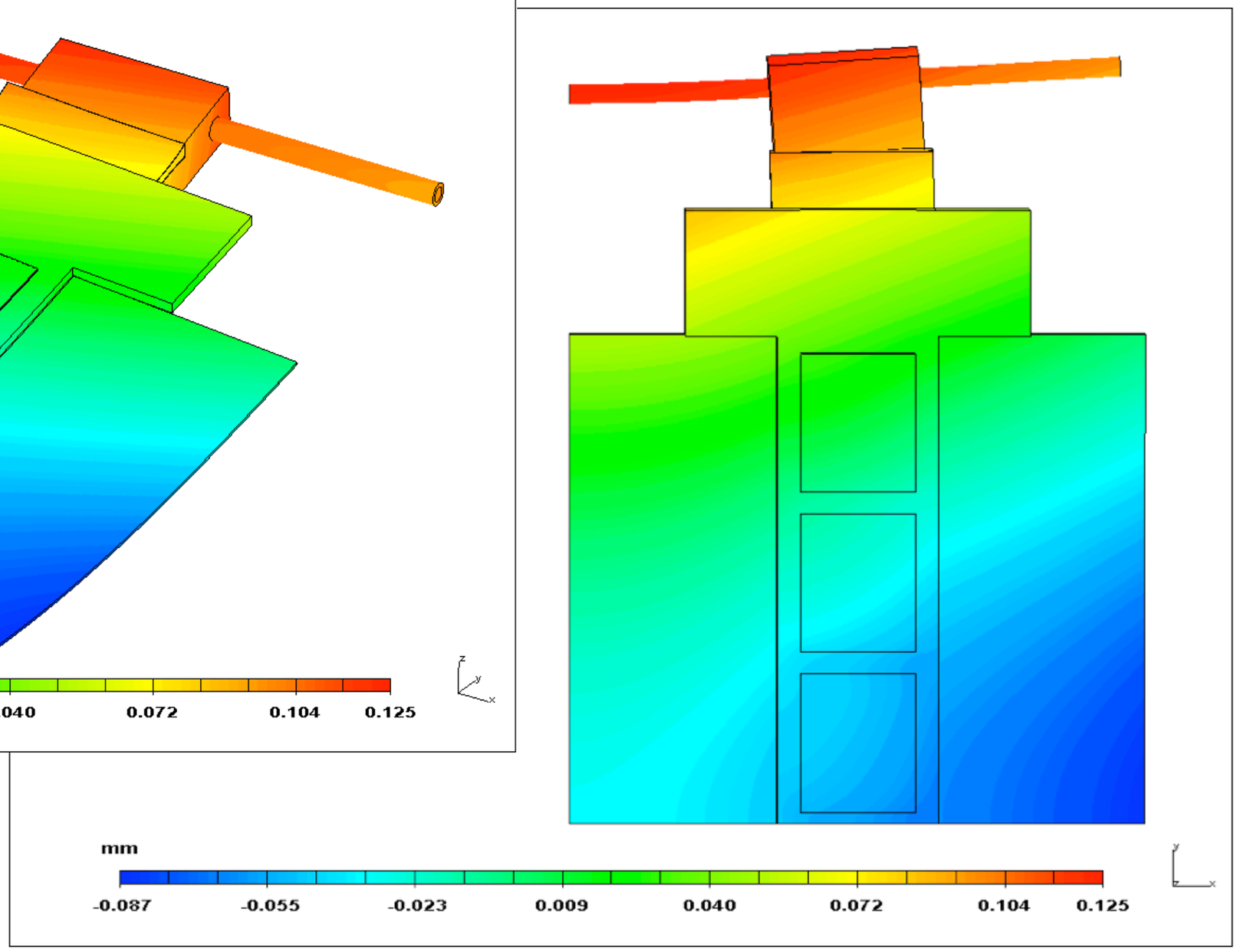

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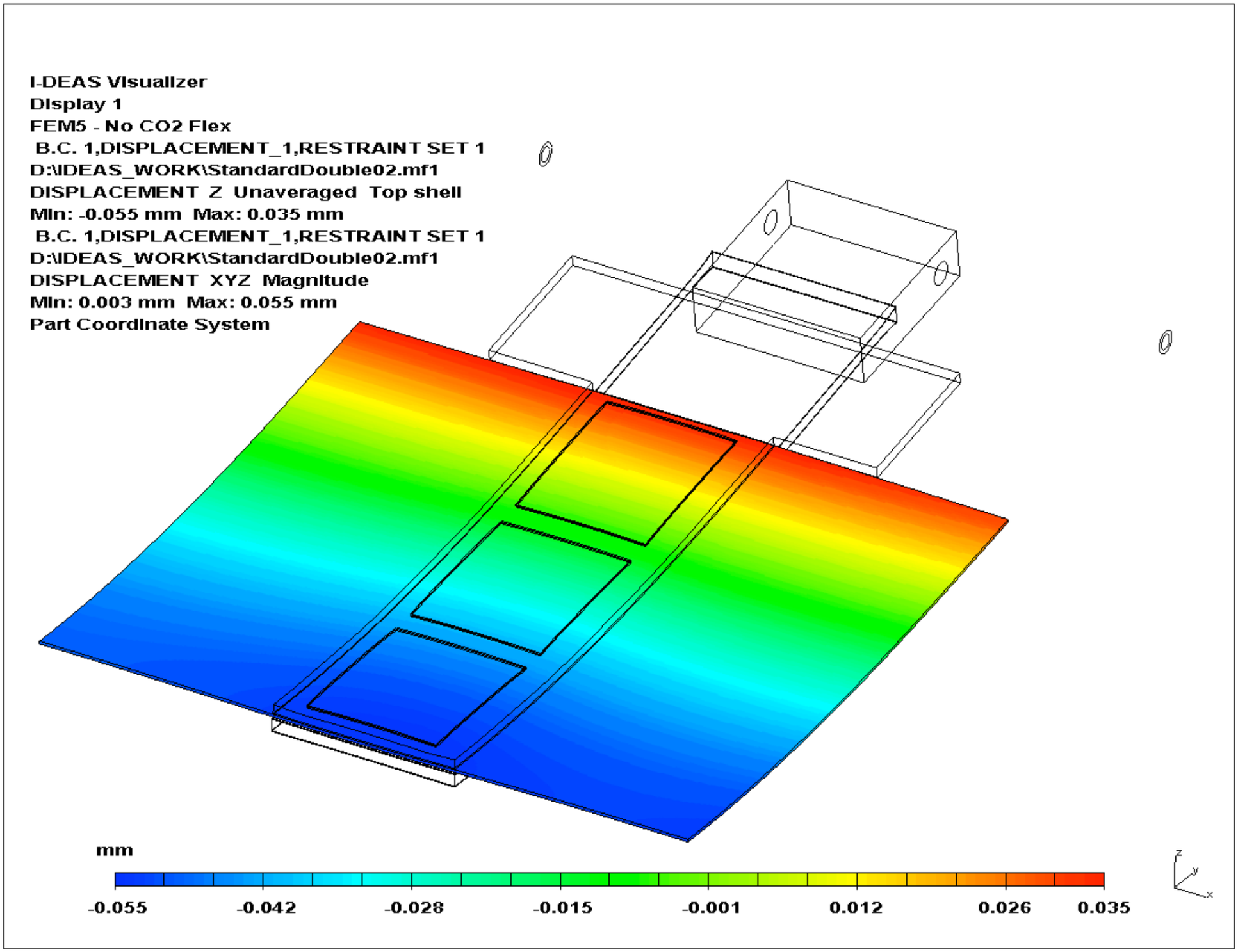
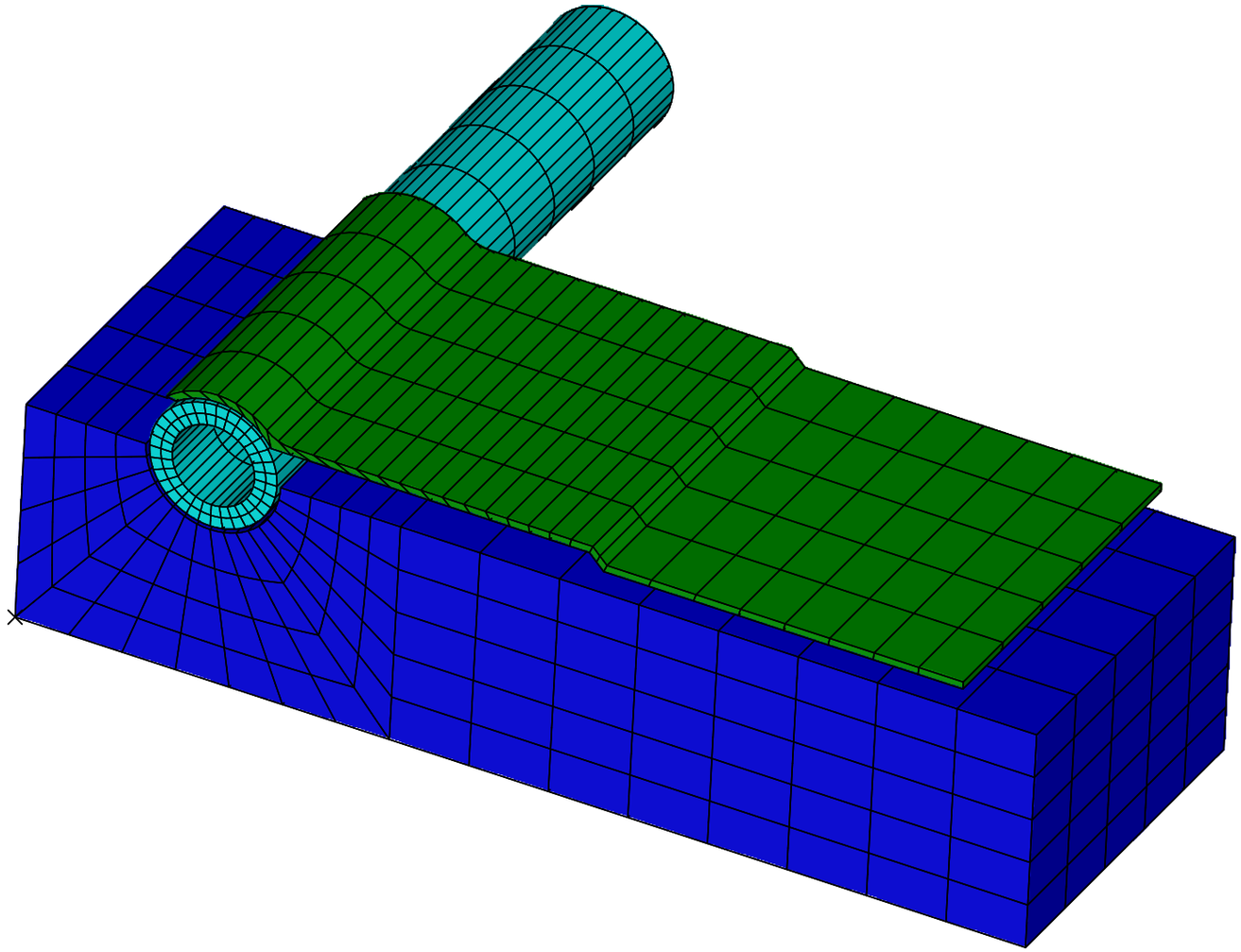


- Cooling block movable wrt. module along X and Y axis

Next Steps

- Continue study of TPG strip

- Repeat deformation calculations for new standard design module
  - Rigid connection between TPG strip and cooling block
  - Allow for movement of pipe wrt. cooling block



- Use deformation results as input to thermal calculation